FHWA Rulemaking and Performance Target Update

MAG Transportation Review Committee

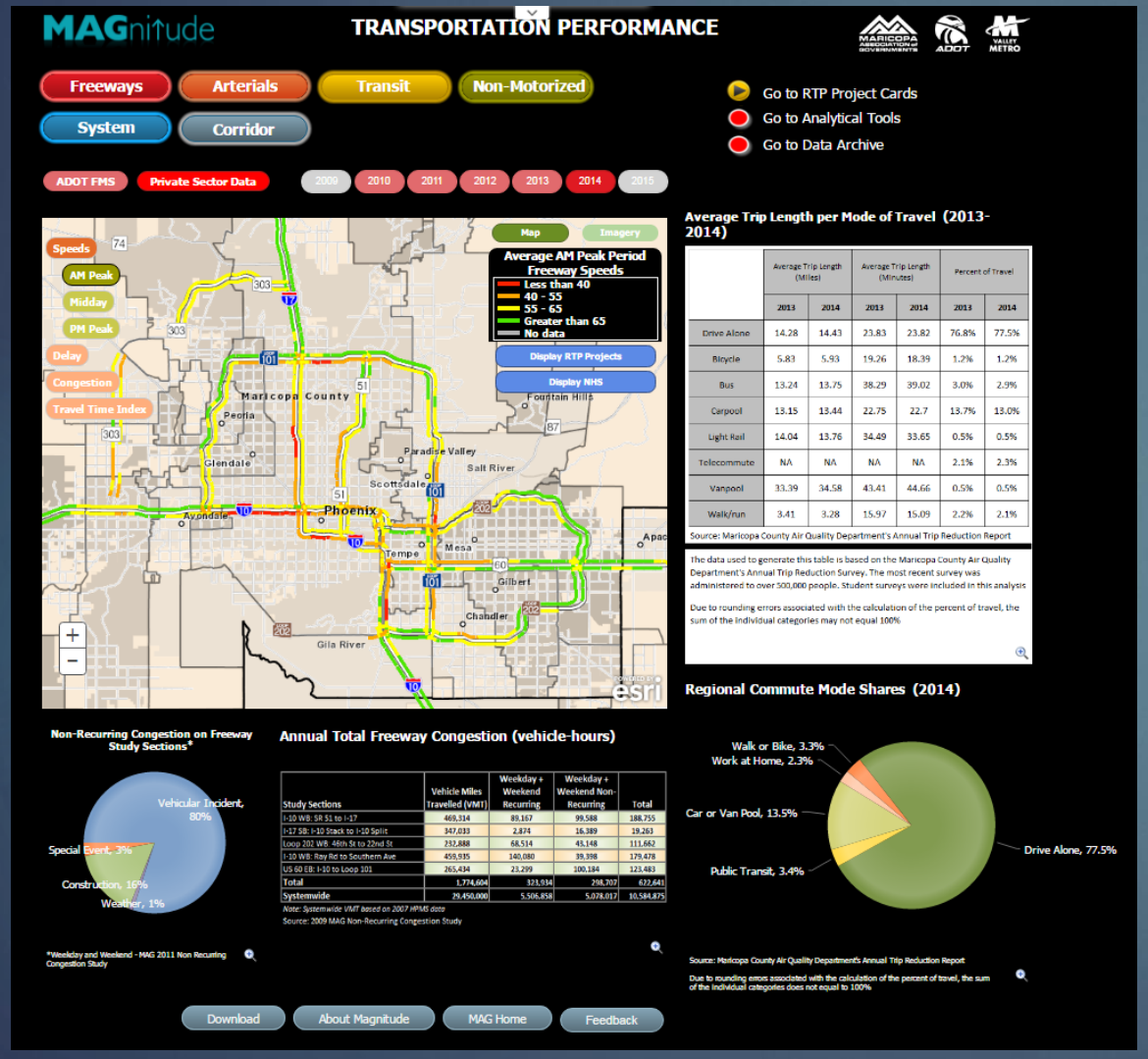
8-31-2017

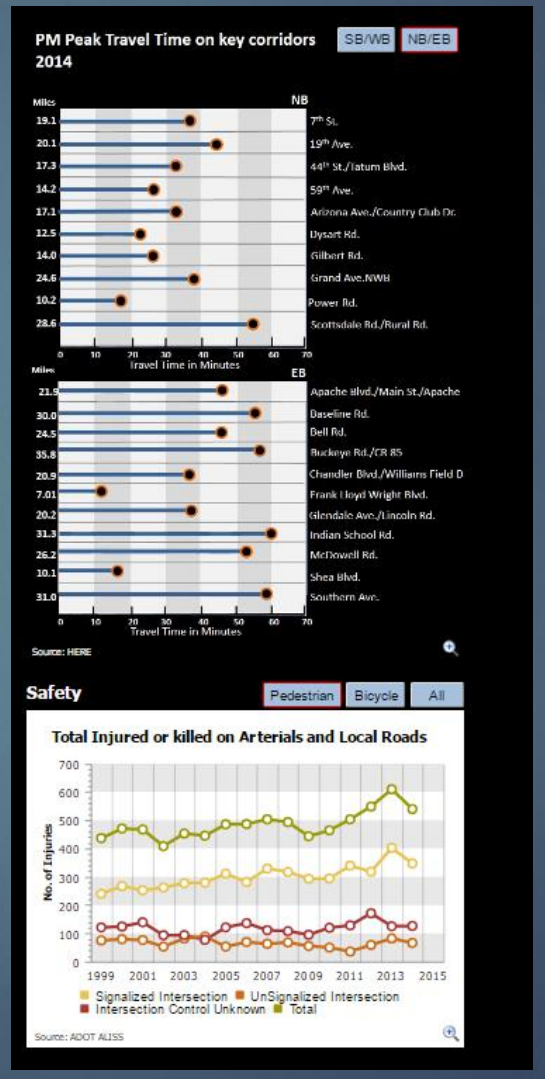
- Last TRC Update
- Proposed Rulemaking (NPRMs)
- Presentation of collaborative work between a MAG member agency /ADOT/FHWA Working Group (PMTAG)

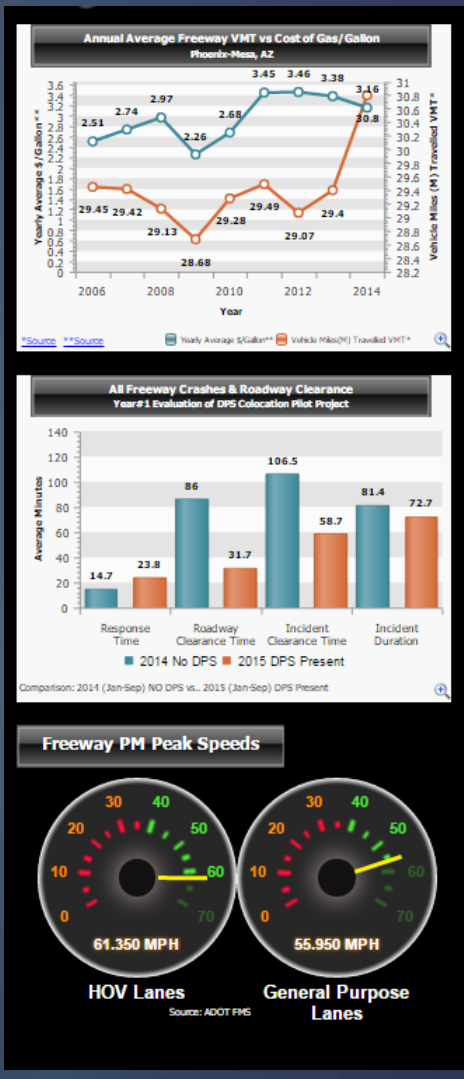
- Data Sources and availability
- Baseline profile
- Trend Analysis
- Defined target setting methodology
- Identify draft targets

Data

MAGnitude http://performance.azmag.gov

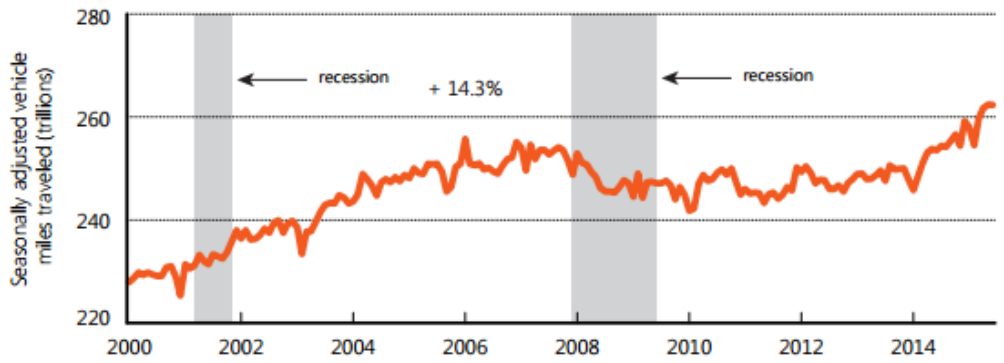




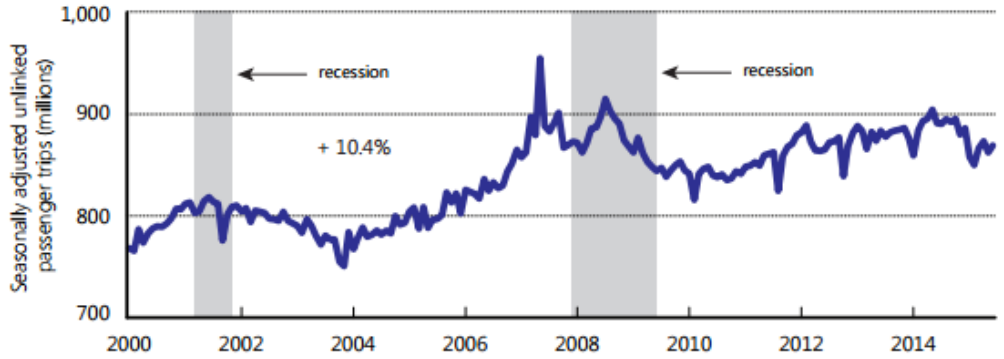


Data

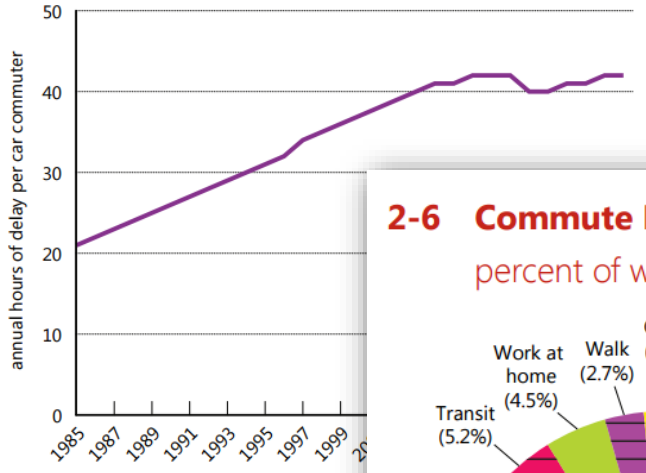
Highway Travel



Transit Ridership



4-1 Road Congestion: 1985–2014

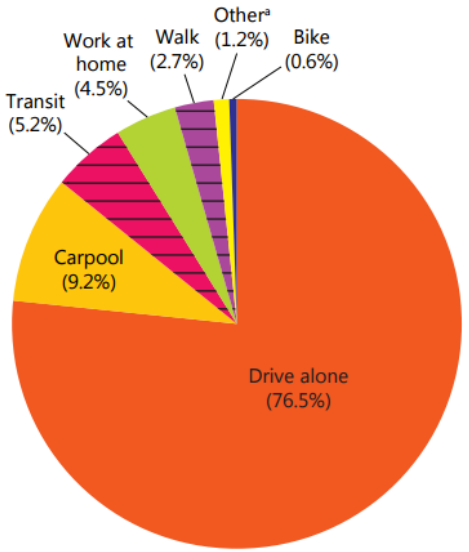


Notes: The methodology used to calculate c
was updated to reflect more comprehensive
tion estimates for each of the 471 U.S. urban

Source: Texas A&M Transportation Institute,
available at mobility.tamu.edu as of Septemb

2-6 Commute Mode Share: 2014

percent of workers age 16 and older

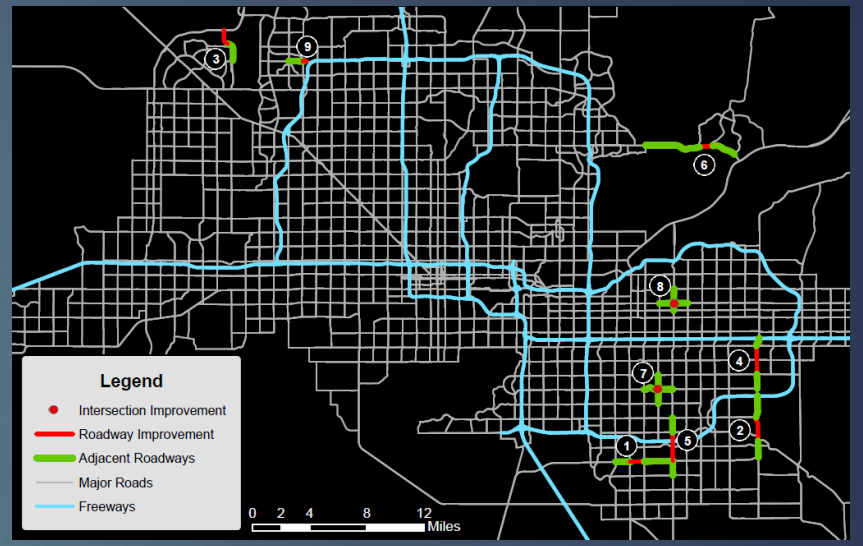


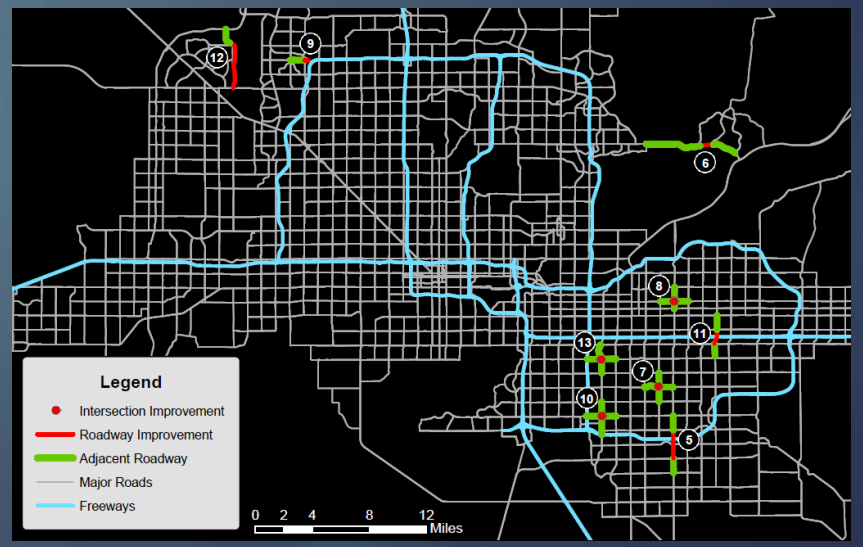
[a] Includes motorcycle, taxi, and other means.

Trend Analysis

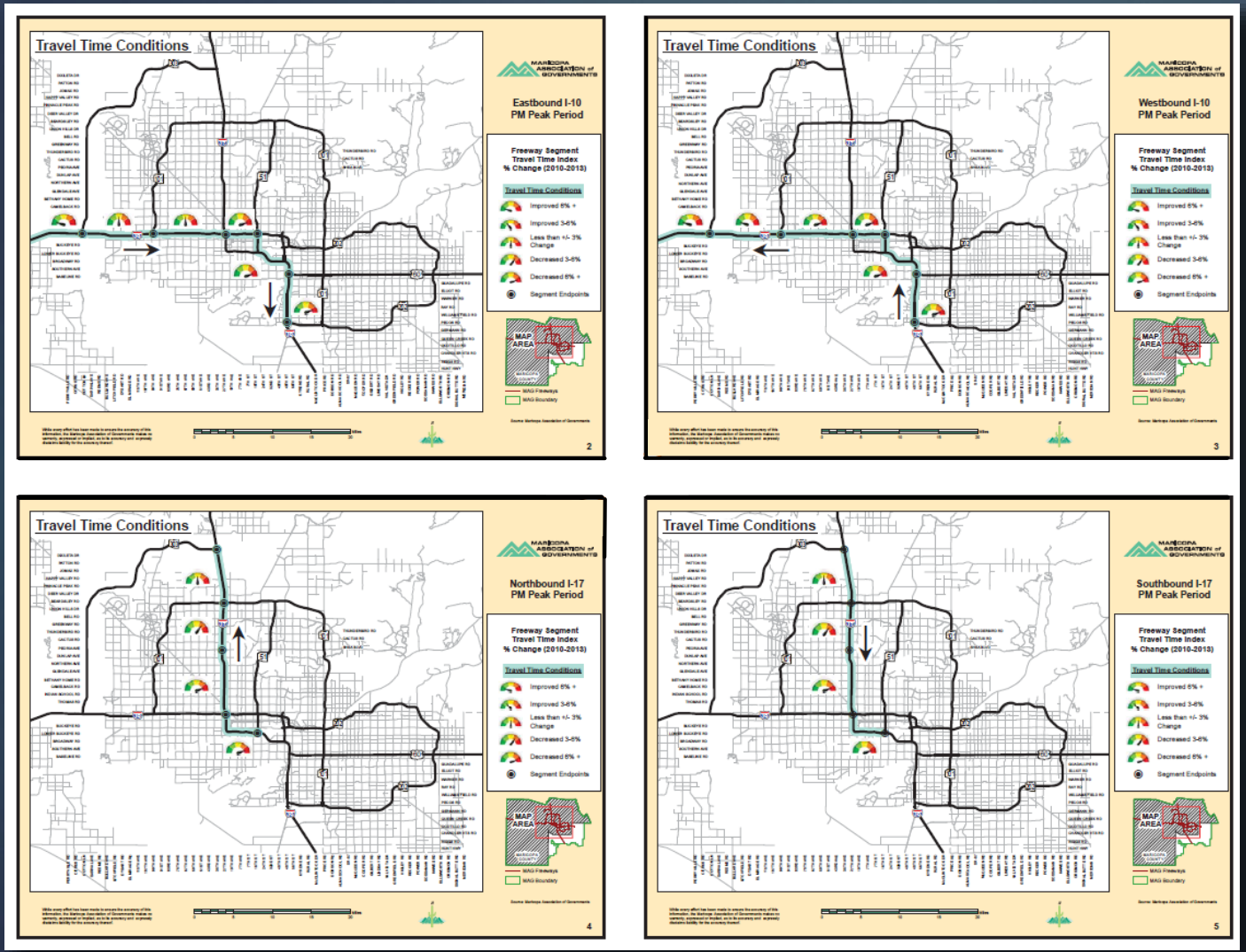
	Road	From	To	2014 PM Speed (mph)	2014 PM Travel Time (min)	2015 PM Speed (mph)	2015 PM Travel Time (min)	Travel Time Performance	Av. Speed Performance
1	19th Ave NB	Southern Ave	Deer Valley Rd	26.73	45.14	25.51	47.30	↓	↓
2	19th Ave SB	Deer Valley Rd	Southern Ave	26.77	45.06	25.73	46.87	↓	↓
3	44th St / Tatum Blvd NB	Loop 202 - Red Mountain	Pinnacle Peak Rd	31.41	32.90	31.04	33.30	↓	↓
4	44th St / Tatum Blvd SB	Pinnacle Peak Rd	Loop 202 - Red Mountain	32.64	31.81	31.39	33.08	↓	↓
5	59th Ave NB	I-10	Loop 101 - Agua Fria	30.08	28.23	28.44	29.86	↓	↓
6	59th Ave SB	Loop 101 - Agua Fria	I-10	30.29	28.04	27.75	30.61	↓	↓
7	12 7th St NB	Southern Ave	Loop 101 - Pima	29.41	39.09	28.79	39.93	↓	↓
8	13 7th St SB	Loop 101 - Pima	Southern Ave	29.58	38.76	28.12	40.76	↓	↓
9	Apache Blvd / Main St / Apache Trail EB	Mill Ave	Ironwood Dr	27.91	46.98	27.28	48.07	↓	↓
10	Apache Blvd / Main St / Apache Trail WB	Ironwood Dr	Mill Ave	28.77	45.55	27.77	47.19	↓	↓
11	Arizona Ave / Country Club Dr NB	Riggs Rd	McDowell Rd	29.92	34.36	29.25	35.14	↓	↓
12	Arizona Ave / Country Club Dr SB	McDowell Rd	Riggs Rd	30.70	33.49	29.45	34.92	↓	↓
13	Baseline Rd EB	51st Ave	Loop 202 - Santan	31.80	56.70	30.63	58.87	↓	↓
14	Baseline Rd WB	Loop 202 - Santan	51st Ave	31.31	57.62	29.99	60.16	↓	↓
15	Bell Rd EB	Grand Ave	Scottsdale Rd	31.51	46.68	30.80	47.75	↓	↓
16	Bell Rd WB	Scottsdale Rd	Grand Ave	30.85	47.74	30.33	48.55	↓	↓
17	Buckeye Rd / CR 85 EB	AZ 85	24th St	36.15	59.43	34.74	61.84	↓	↓
18	Buckeye Rd / CR 85 WB	24th St	AZ 85	35.68	60.18	34.99	61.38	↓	↓
19	Chandler Blvd / Williams Field Rd EB	17th Ave	Loop 202 - Santan	32.37	38.86	31.63	39.77	↓	↓
20	Chandler Blvd / Williams Field Rd WB	Loop 202 - Santan	17th Ave	32.90	38.11	32.02	39.16	↓	↓

	Beardsley Rd WB	Loop 101	91st Ave	2010	N.A.	N.A.	38.39	1.90	N.A.	N.A.
10	Chandler Blvd EB	Loop 101	Alma School Rd	2011	N.A.	N.A.	31.98	3.76	N.A.	N.A.
	Chandler Blvd WB	Alma School Rd	Loop 101	2011	N.A.	N.A.	28.98	4.29	N.A.	N.A.
	Dobson Rd NB	Loop 202	Ray Rd	2011	N.A.	N.A.	31.27	4.35	N.A.	N.A.
	Dobson Rd SB	Ray Rd	Loop 202	2011	N.A.	N.A.	31.76	4.40	N.A.	N.A.





Trend Analysis

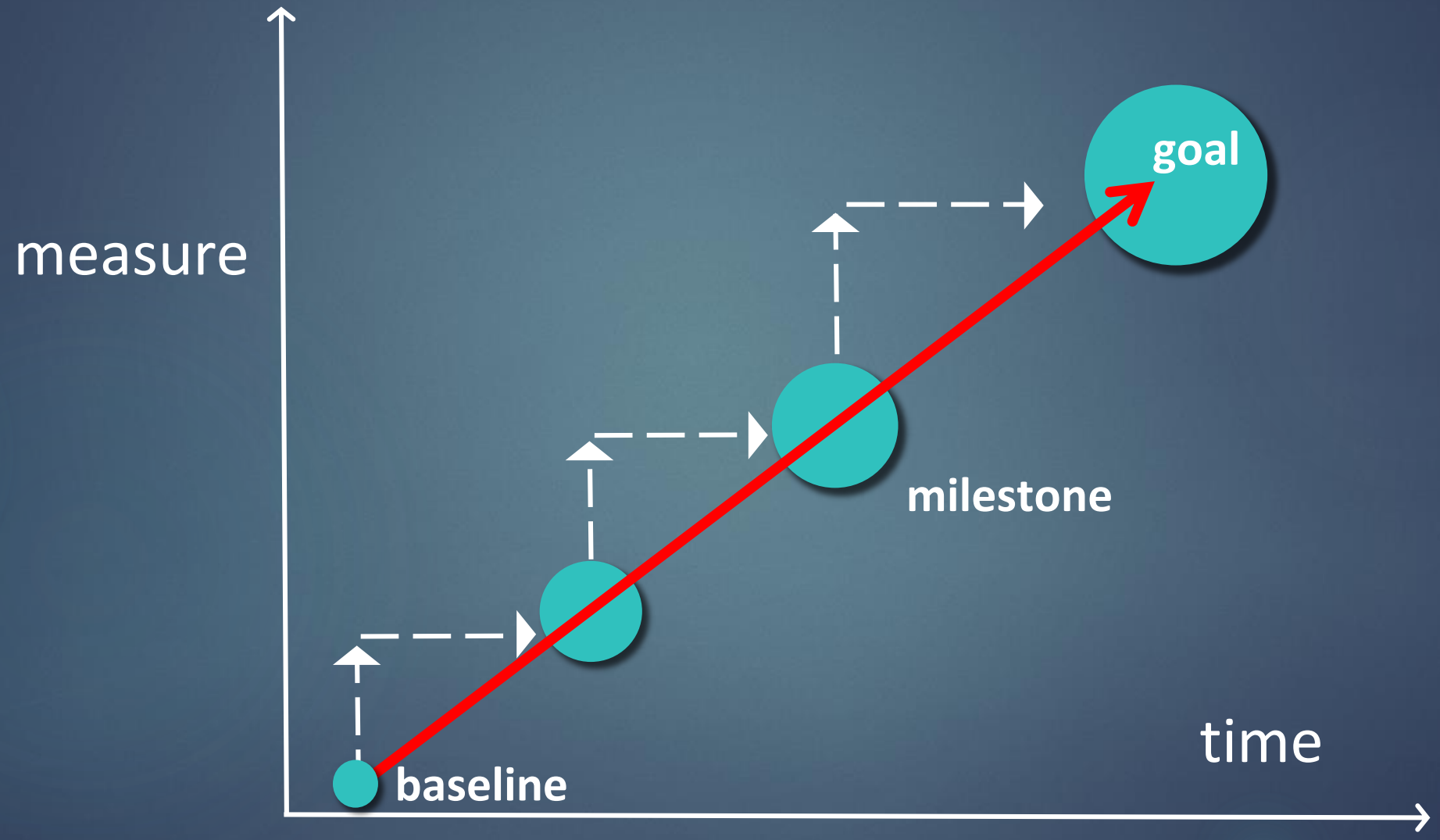


Freeway Segment Travel Time Index % Change (2011-2014)

Travel Time Conditions

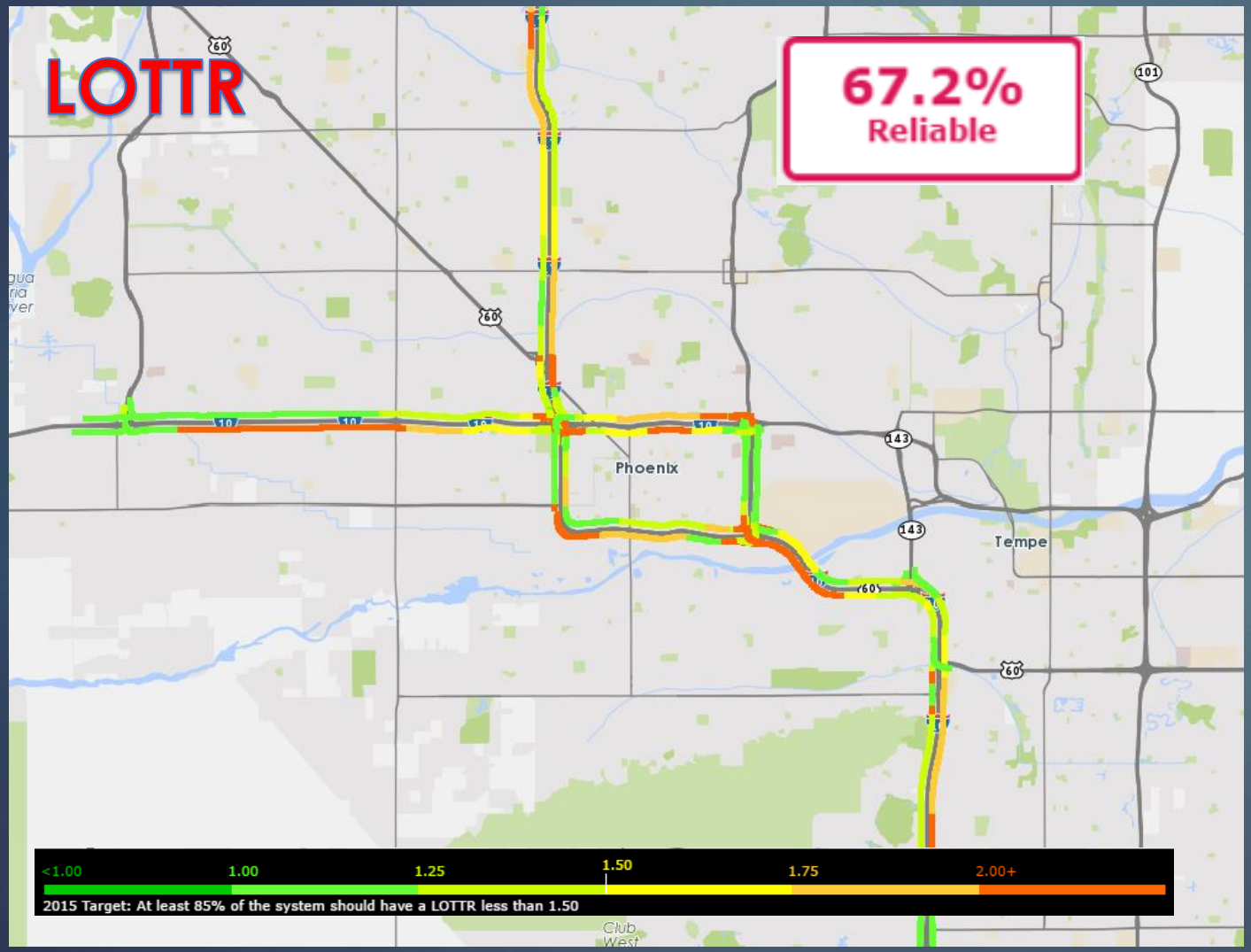
- Improved 6% +
- Improved 3-6%
- Less than +/- 3% Change
- Decreased 3-6%
- Decreased 6% +
- Segment Endpoints

Target setting methodology



Draft Targets - example

Phoenix/Mesa Interstate System Travel Time Reliability - LOTTR

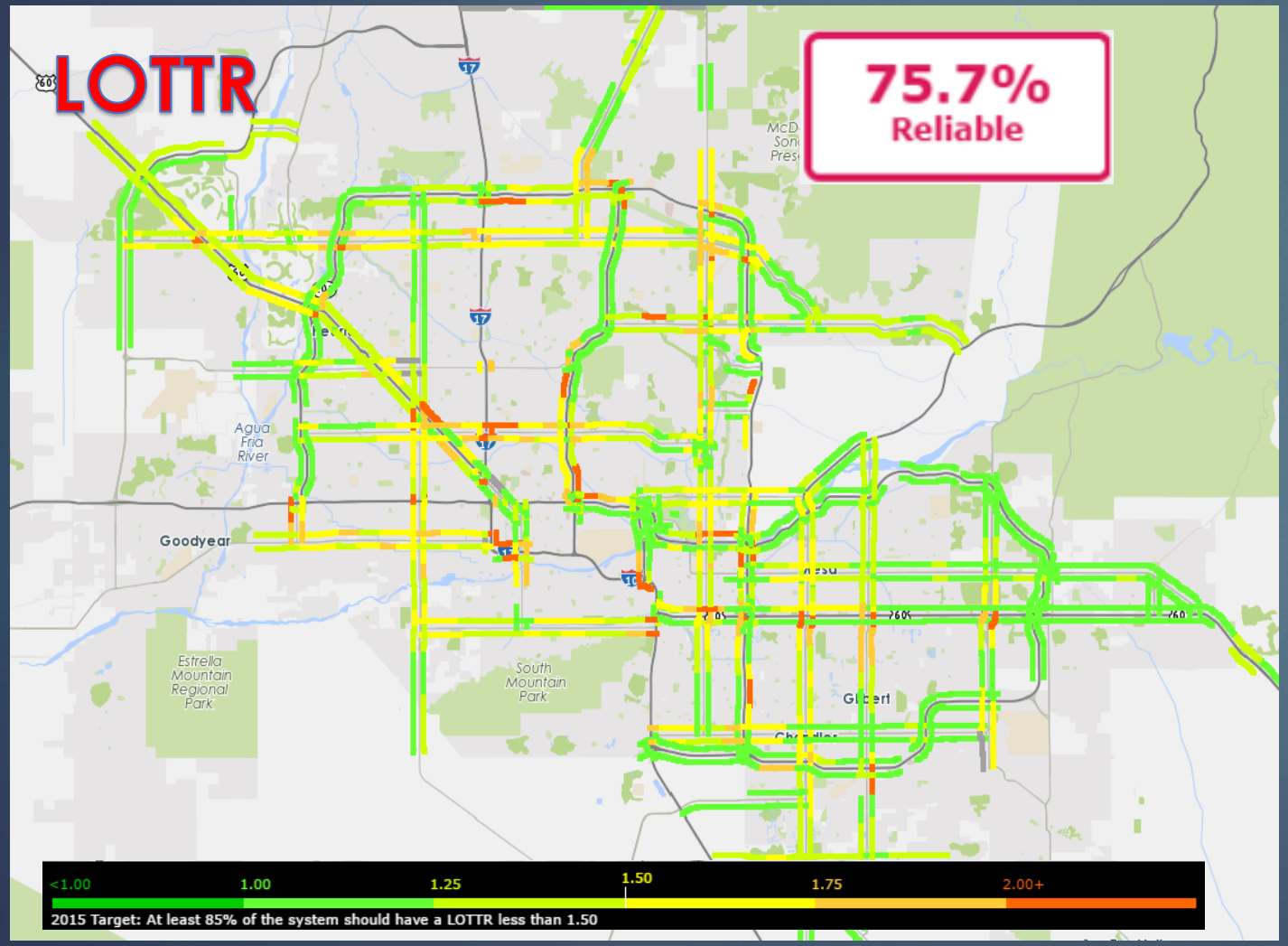


Target

At least 85% of our System should have a LOTTR less than 1.50

Draft Targets - example

Phoenix/Mesa Interstate System Travel Time Reliability - LOTTR



Target

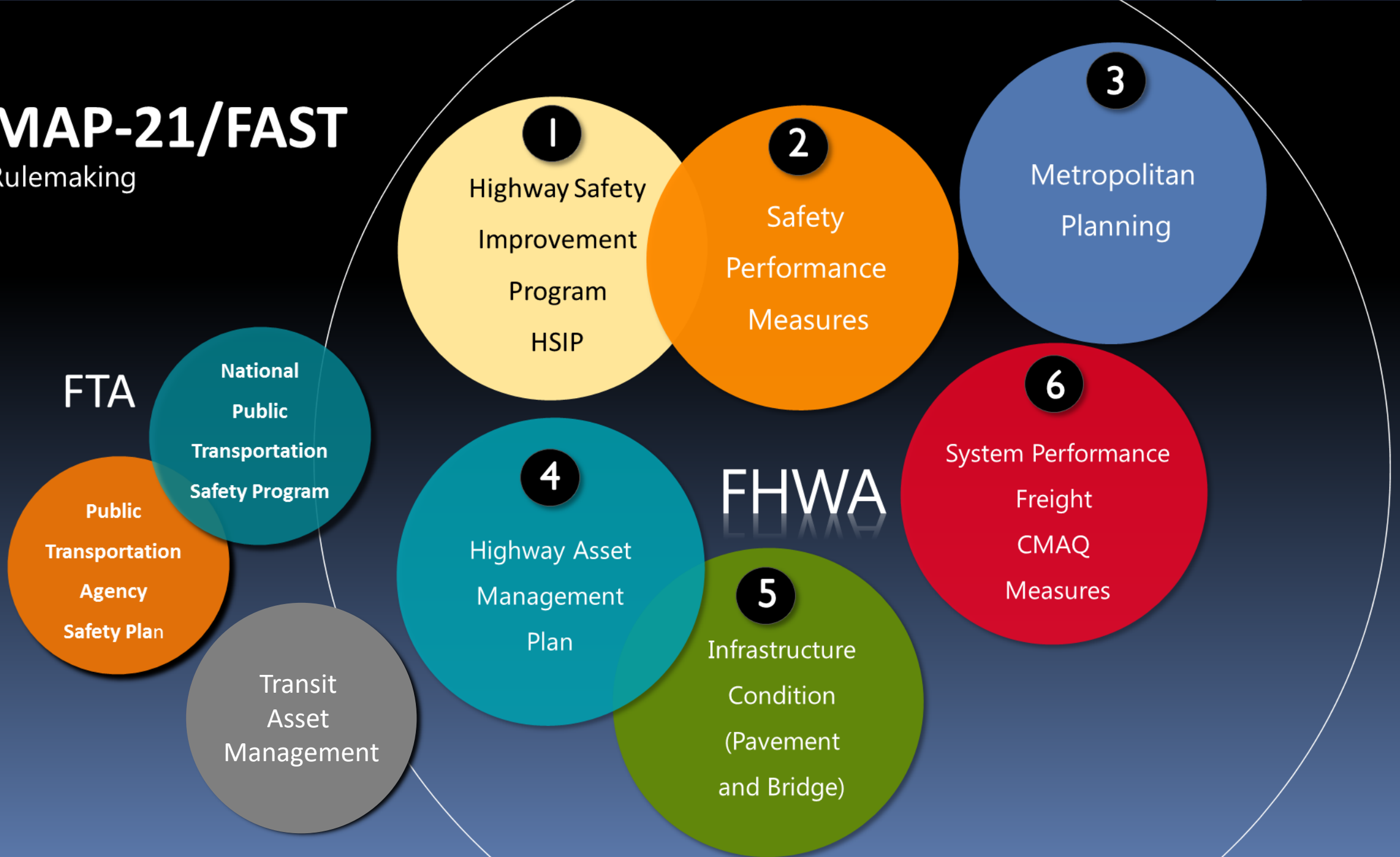
At least 85% of our System should have a LOTTR less than 1.50

Target Setting - Current Status

- Final Rulemaking – May 2017
- New Measures have been introduced
- Assembling new required data sets
- Expecting ADOT to establish State level

MAP-21/FAST

Rulemaking



Rulemakings

TPM-Related Rules	Rule Effective Date
Safety Performance Measures (PM1)	April 14, 2016
Highway Safety Improvement Program (HSIP)	April 14, 2016
Statewide and Non-Metropolitan Planning; Metropolitan Planning	June 27, 2016
Highway Asset Management Plans for NHS	October 2, 2017
Pavement and Bridge Condition Measures (PM2)	May 20, 2017
Performance of the NHS, Freight, and CMAQ Measures (PM3)*	May 20, 2017

safety

planning

assets

congestion

Target Setting - Deadlines

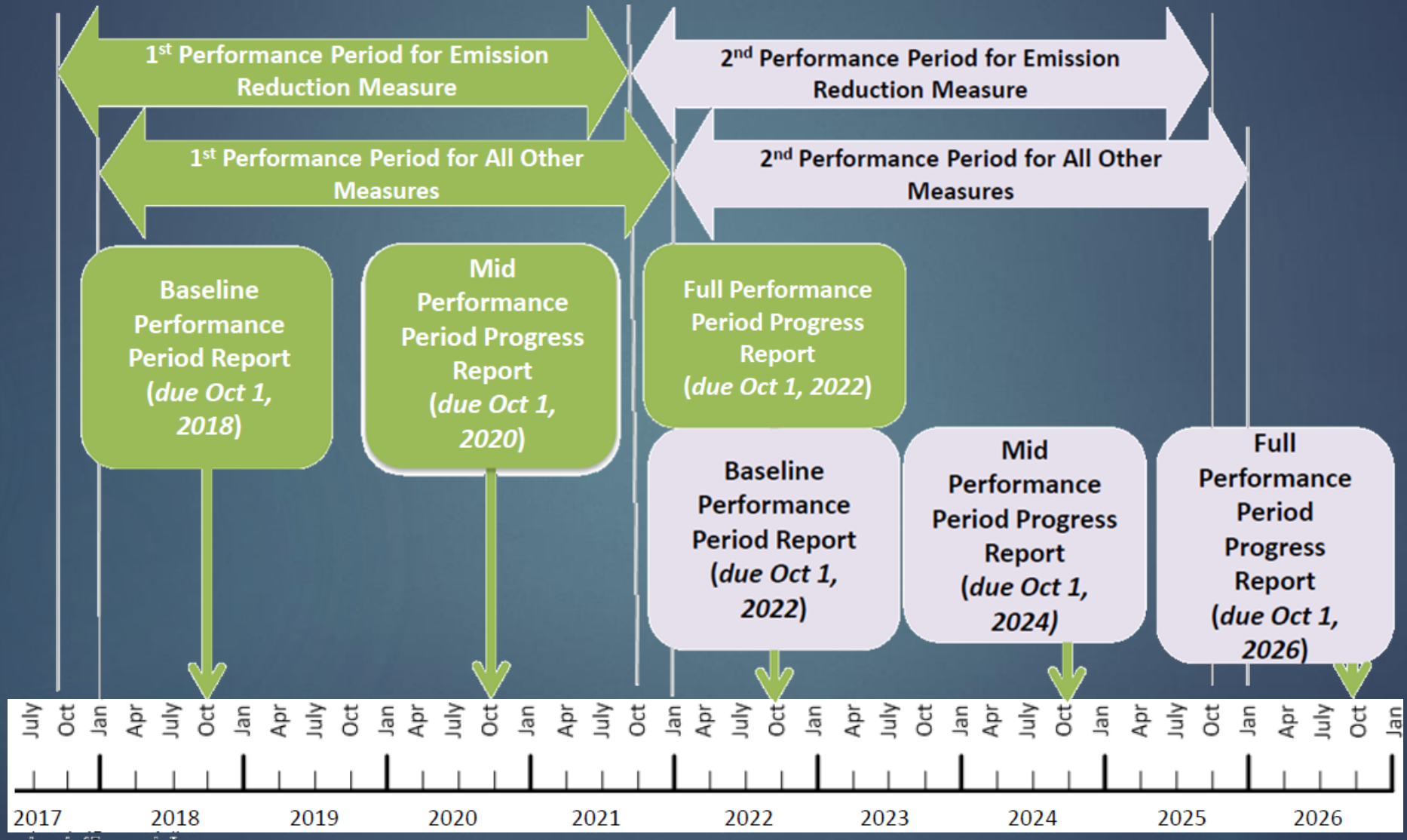
effective date

1 year after final rule

180 days later

Target Setting – Deadlines Example

MARICOPA ASSOCIATION of GOVERNMENTS



Measures: Safety (PM1)

U.S. Department of Transportation
Federal Highway Administration

Measure Area	Performance Measures
Safety	• Number of fatalities • Fatalities per million vehicle miles traveled • Number of serious injuries • Serious injuries per million vehicle miles traveled • Number of non-motorized fatalities and non-motorized serious injuries

Measures: Pavement & Bridge Condition (PM2)

Measure Area	Performance Measures
National Performance Management Measures to Assess **Pavement Condition**	• Percentage of pavements of the Interstate System in Good condition • Percentage of pavements of the Interstate System in Poor condition • Percentage of pavements of the non-Interstate NHS in Good condition • Percentage of pavements of the non-Interstate NHS in Poor condition
National Performance Management Measures to Assess **Bridge Condition**	• Percentage of NHS bridges classified as in Good condition • Percentage of NHS bridges classified as in Poor condition

Measures: System Performance & Freight (PM3)

Measure Area	Performance Measures
Performance of the National Highway System **(System Performance)**	• **Interstate Travel Time Reliability Measure**: Percent of person-miles traveled on the Interstate that are reliable • **Non-Interstate Travel Time Reliability Measure**: Percent of person-miles traveled on the non-Interstate NHS that are reliable
Freight Movement on the Interstate System	• **Freight Reliability Measure**: Truck Travel Time Reliability (TTTR) Index

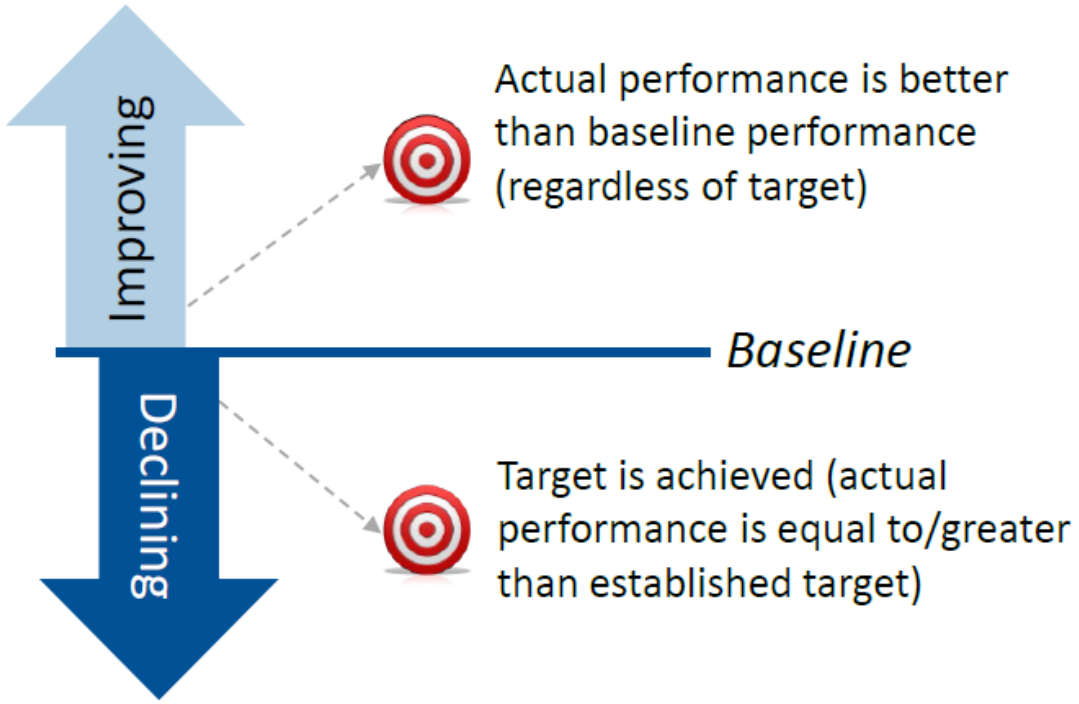
Measures: CMAQ Program (PM3)

U.S. Department of Transportation
Federal Highway Administration

Measure Area	Performance Measures
Measures to Assess the CMAQ Program: **Traffic Congestion**	• **Peak Hour Excessive Delay(PHED) Measure:** Annual Hours of Peak Hour Excessive Delay (PHED) Per Capita • **Non-Single Occupancy Vehicle Travel (SOV) Measure:** Percent of Non-Single Occupancy Vehicle (SOV) Travel
Measure to Assess the CMAQ Program: **On-Road Mobile Source Emissions**	• **Emissions Measure:** Total Emission Reductions

Assessing Significant Progress Toward Achieving NHPP Targets

Significant progress is made when either…



Why is this important?

MARICOPA ASSOCIATION of GOVERNMENTS

Federal Register / Vol. 82, No. 11 / Wednesday, January 18, 2017 / Rules and Regulations 6043

(1) The most recent final annual fuel sales data posted on the Web site by FHWA in Highway Statistics under "Motor Fuel Use (MF–21)" as of August 15th of the HPMS reporting year (*https://www.fhwa.dot.gov/policyinformation/statistics.cfm*); or

(2) The State DOT's fuel sales data used to create the summary data included in FHWA's MF–21, if it allows for a greater level of detail by fuel type. State DOTs shall make this data available to FHWA, upon request.

(h) Final annual vehicle miles traveled (VMT) needed to calculate the GHG measure in § 490.507(b) shall come from the most recently available data posted by FHWA in Highway Statistics in Table VM–3, "Federal-Aid Highway Travel" as of August 15th of the HPMS reporting year.

§ 490.511 Calculation of National Highway System performance metrics.

(a) Two performance metrics are required for the NHS Performance measures specified in § 490.507. These are:

(1) Level of Travel Time Reliability (LOTTR) for the Travel Time Reliability measures in § 490.507(a) (referred to as the LOTTR metric).

(2) Annual Total Tailpipe CO_2 Emissions on the NHS for the GHG measure in § 490.507(b) (referred to as the GHG metric).

(b) The State DOT shall calculate the LOTTR metrics for each NHS reporting segment in accordance with the following:

(1) Data sets shall be created from the travel time data set to be used to calculate the LOTTR metrics. This data set shall include, for each reporting segment, a ranked list of average travel times for all traffic ("all vehicles" in NPMRDS nomenclature), to the nearest second, for 15 minute periods of a population that:

(i) Includes travel times occurring between the hours of 6 a.m. and 10 a.m. for every weekday (Monday–Friday) from January 1st through December 31st of the same year;

(ii) Includes travel times occurring between the hours of 10 a.m. and 4 p.m. for every weekday (Monday–Friday) from January 1st through December 31st of the same year;

(iii) Includes travel times occurring between the hours of 4 p.m. and 8 p.m. for every weekday (Monday–Friday) from January 1st through December 31st of the same year; and

(iv) Includes travel times occurring between the hours of 6: a.m. and 8: p.m. for every weekend day (Saturday–Sunday) from January 1st through December 31st of the same year.

(2) The Normal Travel Time (50th percentile) shall be determined from each data set defined under paragraph (b)(1) of this section as the time in which 50 percent of the times in the data set are shorter in duration and 50 percent are longer in duration. The 80th percentile travel time shall be determined for each data set defined under paragraph (b)(1) of this section as the time in which 80 percent of the times in the data set are shorter in duration and 20 percent are longer in duration. Both the Normal and 80th percentile travel times can be determined by plotting the data on a travel time cumulative probability distribution graph or using the percentile functions available in spreadsheet and other analytical tools.

(3) Four LOTTR metrics shall be calculated for each reporting segment; one for each data set defined under paragraph (b)(1) of this section as the 80th percentile travel time divided by the 50th percentile travel time and rounded to the nearest hundredth.

(c) Tailpipe CO_2 emissions on the NHS for a given year are calculated as follows:

$$(\text{Tailpipe } CO_2 \text{ Emissions on NHS})_{CY} = \left(\sum_{t=1}^{T} (\text{Fuel Consumed})_t \times (CO_2 \text{ Factor})_t\right) \times \left(\frac{\text{NHS VMT}}{\text{Total VMT}}\right)$$

Where:

$(\text{Tailpipe } CO_2 \text{ Emissions on NHS})_{CY}$ = Total tailpipe CO_2 emissions on the NHS in a calendar year (to the nearest thousand tons);

T = the total number of on-road fuel types;

t = an on-road fuel type;

$(\text{Fuel Consumed})_t$ = the quantity of total annual fuel consumed for on-road fuel type "t" (to the nearest thousand gallons);

$(CO_2 \text{ Factor})_t$ = is the amount of CO_2 released per unit of fuel consumed for on-road fuel type "t";

NHS VMT = annual total vehicle-miles traveled on NHS (to the nearest one million vehicle-miles); and

Total VMT = annual total vehicle-miles traveled on all public roads (to the nearest one million vehicle-miles).

(d) For the GHG measure listed in § 490.507(b), MPOs are granted additional flexibility in how they calculate the GHG metric. MPOs may use the MPO share of the State's VMT as a proxy for the MPO share of CO_2 emissions, VMT estimates along with MOVES[2] emissions factors, FHWA's Energy and Emissions Reduction Policy Analysis Tool (EERPAT) model, or other method the MPO can demonstrate has valid and useful results for CO_2 measurement.

(e) Starting in 2018 and annually thereafter, State DOTs shall report the LOTTR metrics, defined in paragraph (b) of this section, in accordance with HPMS Field Manual by June 15th of each year for the previous year's measures.

(1) Metrics are reported to HPMS by reporting segment. All reporting segments where the NPMRDS is used shall be referenced by NPMRDS TMC(s) or HPMS section(s). If a State DOT elects to use, in part or in whole, the equivalent data set, all reporting segment shall be referenced by HPMS section(s); and

(2) The LOTTR metric (to the nearest hundredths) for each of the four time periods identified in paragraphs (b)(1)(i) through (iv) of this section: the corresponding 80th percentile travel times (to the nearest second), the corresponding Normal (50th percentile) Travel Times (to the nearest second), and directional AADTs. If a State DOT does not elect to use FHWA supplied occupancy factor, as provided in § 490.507(d), that State DOT shall report vehicle occupancy factor (to the nearest tenth) to HPMS.

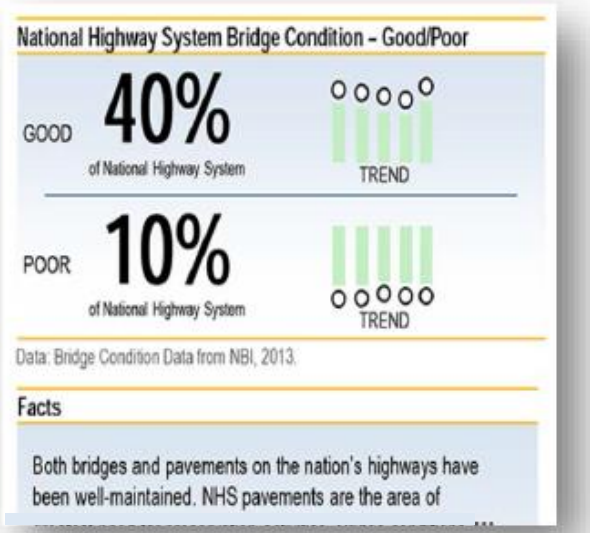
(f) Starting in 2018 and biennially thereafter, State DOTs shall report, as required in § 490.107, the GHG metrics, defined in paragraph (c) of this section. Specifically, the following GHG metric shall be reported in the State Biennial Performance Reports, as required in § 490.107:

(1) Total tailpipe CO_2 emissions, as specified in paragraph (c) of this section, generated by on-road sources travelling on the NHS (the GHG metric), and total on-road CO_2 emissions (the step in the calculation prior to

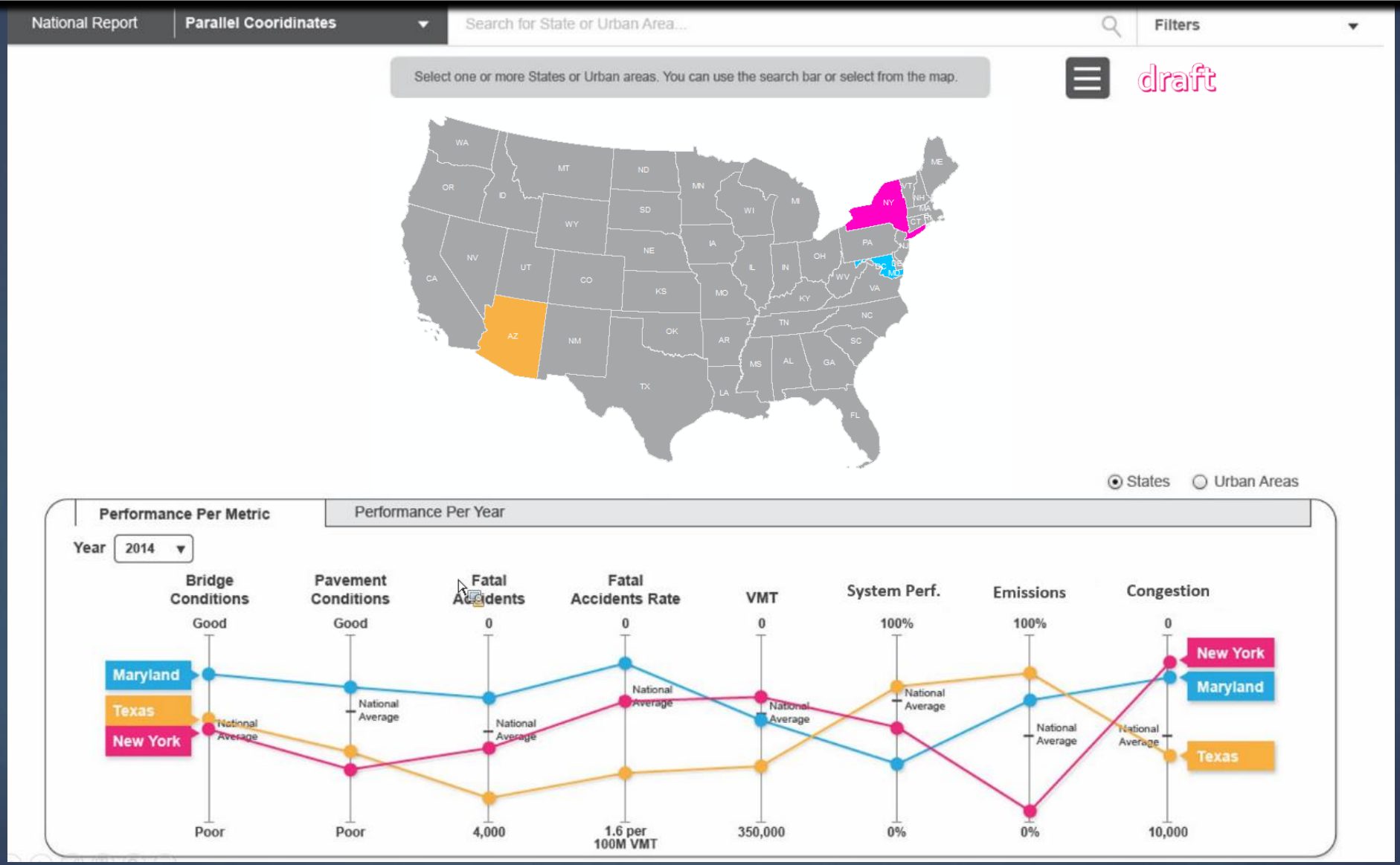
[2] MOVES (Motor Vehicle Emission Simulator) is EPA's emission modeling system that estimates emissions for mobile sources at the national, county, and project level for criteria air pollutants, greenhouse gases, and air toxics. See *https://www.epa.gov/moves*.

State DOT Progress Reporting Portal

Performance Reports

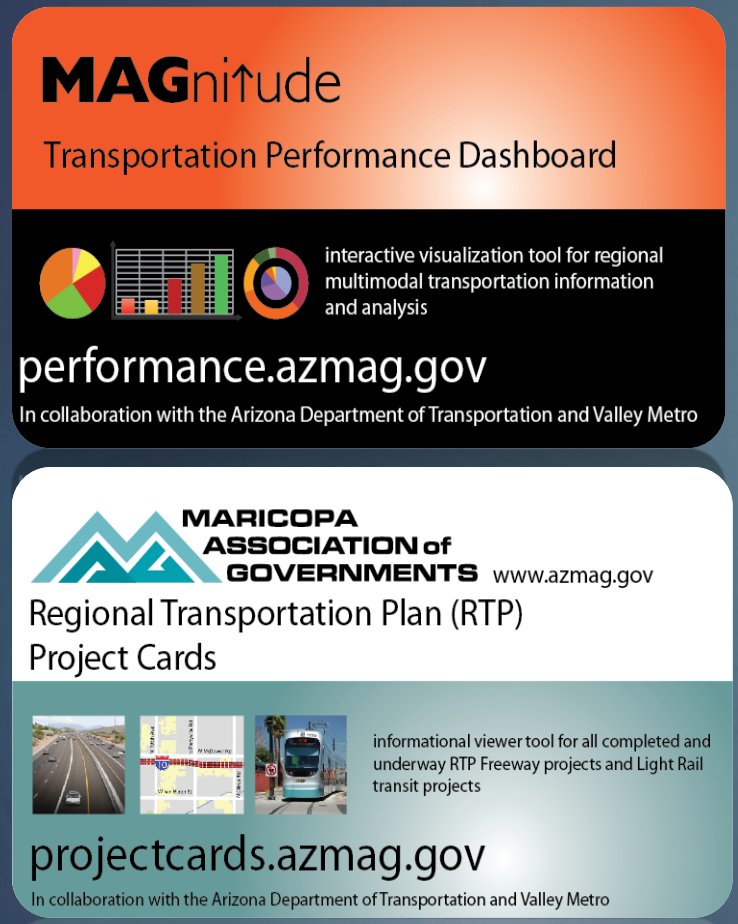


Why is this important?



Next Steps

- Continue Coordination with ADOT
- Meet with PMTAG, MAG Comittees
- Recalculate all new measures
- Determine MAG Targets



Link to FHWA Rulemaking:

https://www.fhwa.dot.gov/tpm/

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